

In the Claims:

Please amend Claims 1-13, 17-18, and 23. The status of all claims is as follows:

1. (Currently Amended) A method of selecting a measuring method by selecting one of two measuring methods for use in an ultrasonic flowmeter capable of applying both a pulse Doppler method for a flow rate measurement and a transit time method for a flow rate measurement, comprising:

a first determining step of determining a current measuring method;

a second determining step of determining reliability of a reception wave;

and

a selecting step of selecting a measuring method different from the current measuring method when it is determined that the reliability of the reception wave is insufficient.

2. (Currently Amended) The method according to claim 1, wherein:

the second determining step comprises:

a step of obtaining a value as an index of reliability of the reception wave; and

a step of determining whether or not the value as the index is smaller than a registered set value; and

the selecting step comprises a step of determining that reliability is not sufficient when the value as the index is smaller than the set value.

3. (Currently Amended) The method according to claim 2, wherein:

when the current measuring method determined in the first determining step is the pulse Doppler method, the value as the index is an amplitude value of the reception wave; and

the set value is a smallest acceptable amplitude value of a reception wave in the pulse Doppler method.

4. (Currently Amended) The method according to claim 2, wherein:

when the current measuring method determined in the first determining step is the pulse Doppler method, the value as the index is a ratio of an amplitude value of a reception wave to a predetermined amplitude value set in advance; and

the set value is associated with the ratio.

5. (Currently Amended) The method according to claim 2,

wherein:

when the current measuring method determined in the first determining step is the pulse Doppler method, the value as the index is a power spectrum of a Doppler frequency obtained by performing a Fourier transform on the reception wave; and the set value is a predetermined power value.

6. (Currently Amended) The method according to claim 2,

wherein:

when the current measuring method determined in the first determining step is the pulse Doppler method, the value as the index is a ratio of a power spectrum of a Doppler frequency obtained by performing a Fourier transform on the reception wave to a predetermined power value; and the set value is associated with the ratio.

7. (Currently Amended) The method according to claim 2,

wherein:

when the current measuring method determined in the first determining step is the transit time method, the value as the index is a ratio of a transmission wave amplitude to a maximum amplitude of the reception wave; and the set value is associated with the ratio.

8. (Currently Amended) The method according to claim 2,

wherein:

when the current measuring method determined in the first determining step is the transit time method, the value as the index is a ratio of a power spectrum of a transmission frequency contained in the reception wave obtained by performing a Fourier transform on the reception wave to a predetermined power value; and
the set value is associated with the ratio.

9. (Currently Amended) The method according to claim 1,

wherein:

when the current measuring method determined in the first determining step is the pulse Doppler method, the second determining step determines a measurement point in a status in which a measurement can be correctly performed at present, and counts the number of the correct measurement points: and

the selecting step changes the method to the transit time method when the obtained number of correct measurement points is smaller than a first threshold registered in advance.

10. (Currently Amended) The method according to claim 9,

wherein

the second determining step obtains the number of times in which a waveform of the reception wave is not changed continuously for each measurement point, and determines as the correct measurement point a measurement point at which the obtained number of times is smaller than a predetermined second threshold.

11. (Currently Amended) The method according to claim 9, wherein

the second determining step obtains a current velocity of flow for each measurement point, obtains an average value of velocity of flow obtained up to the last time, obtains a difference between the obtained current velocity of flow and the average value, determines whether or not the difference is smaller than a predetermined third threshold, and defines a measurement point having the difference smaller than the predetermined third threshold as the correct measurement point.

12. (Currently Amended) The method according to claim 9, wherein

the second determining step obtains a Doppler shift based on the reception wave for each measurement point, obtains an average value of Doppler shifts obtained up to the last time, obtains a difference between the obtained Doppler shift and the average value, and defines a measurement point having the difference smaller than a predetermined fourth threshold as the correct measurement point.

13. (Currently Amended) A method of selecting a measuring method by selecting one of two measuring methods for use in an ultrasonic flowmeter capable of applying both a pulse Doppler method for a flow rate measurement and a transit time method for a flow rate measurement, comprising:

a first determining step of determining a current measuring method;

a second determining step of determining reliability of a reception wave;

and

a selecting step of selecting a measuring method different from the current measuring method when it is determined that the reliability of the reception wave is insufficient, and when it is determined that the reliability of the reception wave is sufficient, obtaining a value as an index of reliability of a reception wave in each of the pulse Doppler method and the transit time method, comparing the values as the indexes of the two measuring methods, and selecting a measuring method having a larger value as the index.

14. (Original) The method according to claim 13, wherein

a value as an index of reliability of a reception wave in the transit time method is a weighted and added value between a ratio between a transmission wave amplitude and a maximum amplitude of a reception wave and a ratio between frequency power of a transmission wave and a reception wave.

15. (Original) The method according to claim 13, wherein
a value as an index of reliability of a reception wave in the pulse Doppler
method is a weighted and added value of a ratio of an amplitude of a reception wave to a
predetermined amplitude value, and a ratio of a power spectrum of a Doppler frequency
to a predetermined power value.

16. (Original) The method according to claim 13, wherein
the method selecting step further comprises:
a step of determining whether or not a value of the index having a
larger value as a result of the comparison is larger than a predetermined value; and
a step of outputting information about abnormality when the value is
smaller than the predetermined value.

17. (Currently Amended) An ultrasonic flowmeter capable of
applying both a pulse Doppler method for a flow rate measurement and a transit time
method for a flow rate measurement, comprising:

a first determination unit determining a current measuring method;
a second determination unit determining reliability of a reception wave; and

a selection unit selecting a measuring method different from the current measuring method when it is determined that the reliability of the reception wave is insufficient.

18. (Currently Amended) An ultrasonic flowmeter capable of applying both a pulse Doppler method for a flow rate measurement and a transit time method for a flow rate measurement, comprising:

a first determination unit determining a current measuring method;

a second determination unit determining reliability of a reception wave; and

a selection unit selecting a measuring method different from the current measuring method when it is determined that the reliability of the reception wave is insufficient, and when it is determined that the reliability of the reception wave is sufficient, obtaining a value as an index of reliability of a reception wave in each of the pulse Doppler method and the transit time method, comparing the values as the indexes of the two measuring methods, and selecting a measuring method having a larger value as the index.

19. (Original) A computer-readable recording medium storing a program used to direct a computer of an ultrasonic flowmeter capable of applying both a pulse Doppler method for a flow rate measurement and a transit time method for a flow rate measurement to realize:

a function of determining a current measuring method;
a function of determining reliability of a reception wave; and
a selecting function of selecting a measuring method different from the
current measuring method when it is determined that the reliability of the reception wave
is insufficient.

20. (Original) A computer-readable recording medium storing a
program used to direct a computer of an ultrasonic flowmeter capable of applying both a
pulse Doppler method for a flow rate measurement and a transit time method for a flow
rate measurement to realize:

a function of determining a current measuring method;
a function of determining reliability of a reception wave; and
a function of selecting a measuring method different from the current
measuring method when it is determined that the reliability of the reception wave is
insufficient, and when it is determined that the reliability of the reception wave is
sufficient, obtaining a value as an index of reliability of a reception wave in each of the
pulse Doppler method and the transit time method, comparing the values as the indexes of
the two measuring methods, and selecting a measuring method having a larger value as
the index.

21. (Original) A program used to direct a computer of an ultrasonic flowmeter capable of applying both a pulse Doppler method for a flow rate measurement and a transit time method for a flow rate measurement to realize:

a function of determining a current measuring method;

a function of determining reliability of a reception wave; and

a selecting function of selecting a measuring method different from the current measuring method when it is determined that the reliability of the reception wave is insufficient.

22. (Original) A program used to direct a computer of an ultrasonic flowmeter capable of applying both a pulse Doppler method for a flow rate measurement and a transit time method for a flow rate measurement to realize:

a function of determining a current measuring method;

a function of determining reliability of a reception wave; and

a function of selecting a measuring method different from the current measuring method when it is determined that the reliability of the reception wave is insufficient, and when it is determined that the reliability of the reception wave is sufficient, obtaining a value as an index of reliability of a reception wave in each of the pulse Doppler method and the transit time method, comparing the values as the indexes of the two measuring methods, and selecting a measuring method having a larger value as the index.

23. (Currently Amended) An electronic device for use with an ultrasonic flowmeter capable of applying both a pulse Doppler method for a flow rate measurement and a transit time method for a flow rate measurement, comprising:

a first determination unit determining a current measuring method;

a second determination unit determining reliability of a reception wave; and

a selection unit selecting a measuring method different from the current measuring method when it is determined that the reliability of the reception wave is insufficient.